

## North Lahontan Hydrologic Region

### Setting

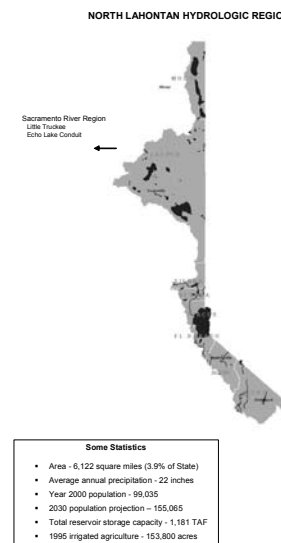
The North Lahontan Hydrologic Region forms part of the western fringe of the Great Basin, a large landlocked area that includes most of Nevada and northern Utah. Major rivers of the region flow into Nevada. The mountain crests forming the western boundary of the region range up to elevation 11,000 feet. The region's climate is characterized by dry summers with the exception of occasional scattered thunder showers. Most winter precipitation consists of snow, which accumulates over the winter months in the mountain areas above 5,000 feet and becomes a source of water for the late spring and summer months.

Only about a quarter of one percent of California's population lives in the North Lahontan Region. Much of the region is national forest and lands under the jurisdiction of the Bureau of Land Management. Cattle ranching is the principal agricultural activity with pasture and alfalfa being the dominant irrigated crops. Land irrigated by surface water generally has a higher than normal applied water rate; when possible a portion of the spring runoff is spread on the soil to deep percolate and recharge groundwater basins rather than being allowed to flow to saline lakes and evaporate. Tourism and recreation are the principal economic activities in the Truckee-Tahoe area and the surrounding mountains. On a typical summer day, the number of visitors within the Tahoe Basin may equal the number of full-time residents. The principal consumptive use of applied water used for the for environment are those of State Wildlife Areas around Honey Lake which provide important habitat for waterfowl and several threatened or endangered species, including the bald eagle, sand hill crane, bank swallow, and peregrine falcon.

Much of the supply from the Truckee, Carson, and Walker rivers is reserved for use by Nevada interests under various water rights settlements and agreements. Most locally developed water supplies are from groundwater or small surface water diversions, with storage provided by outlet dams constructed on natural lakes. Federal water storage projects in the region include Stampede Reservoir, Boca Reservoir, and Prosser Creek Reservoir, constructed primarily to provide water supply for Nevada urban and agricultural water use, downstream flood protection, protection of threatened and endangered species and local recreation. The U.S. Army Corps of Engineers also completed the Martis Creek Dam in 1971 to

### Regional planning

A major ongoing regional planning program in the Tulare Lake Region is the Kern County Water Agency Conjunctive Management Program (see Volume 2 for details).



**Figure X. Map of the North Lahontan Hydrologic Region can be found on page 4-62. When the digital version is completed, the reader will be able to click on this map for a full-page view.**

WATER BALANCE SUMMARY - TAF

Water Entering the Region - Water Leaving the Region = Storage Changes in Region

(See Volume 2 for Details)	1999 (wet)	2000 (average)	2001 (dry)
<b>Water Entering the Region</b>			
Precipitation			
Imports from Other Regions			
<b>Total</b>			
<b>Water Leaving the Region</b>			
Consumptive Use of Applied Water*			
(Ag, M&I, Wetlands)			
Exports to Other Regions			
Additional Outflow to Salt Sink			
Evaporation, Evapotranspiration of Native Vegetation, Groundwater Subsurface Outflows, Natural and Incidental Runoff, Ag Effective Precipitation & Other Outflows			
<b>Total</b>			
<b>Storage Changes in the Region</b>			
(+) Water added to storage			
(-) Water released from storage			
<b>Change in Surface Reservoir Storage</b>			
<b>Change in Groundwater Storage</b>			
<b>Total</b>			
<b>Applied Water* (Compare with Consumptive Use)</b>			

\* Definition - Consumptive use is the amount of applied water used and no longer available as a source of supply. Applied water is greater than consumptive use because it includes consumptive use, reuse, and outflow.

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provide additional flood protection for the Reno-Sparks area.

The water balance table provides a summary of detailed water accounting contained in Volume 2. As shown in the table more water flows into Nevada than is consumptively used in the region.

## State of the region

Although Lake Tahoe contains over 122 million acre-feet of pristine mountain water (*nearly three times the capacity of California's more than 1,300 reservoirs*), much of the North Lahontan Region is chronically short of water. In the northern portion of the Region, drought is a way of life for agriculture; irrigation continues as long as water is available and then stops. During dry years many areas with little or no storage may only have surface water available for a short period early in the season and then may only be able to irrigate a limited acreage if they do not supplement their surface water supply with groundwater. In Modoc and Lassen Counties some groundwater well pumping capacities diminish very rapidly even during the first year of a drought. While the Truckee River Operating Agreement has the potential to settle 50 years of disputes over Truckee and Carson River waters, the execution and implementation of that agreements will require considerable effort in the coming years.

The states of California and Nevada have been participating in a confidential mediation that could affect water users in both states. The primary issue of concern is the declining level of Walker Lake in Nevada and the resulting impact on the lake's fishery. The water level at Walker Lake has declined from an elevation of about 4,080 feet in 1882 to 3,941 feet in 2003; salinity has increased during the same period from about 2,500 mg/L TDS to 13,200 mg/L TDS. To maintain lake salinity at the current level, about 33 taf/yr more inflow is needed. Other issues that could also affect existing water users are the potential tribal water rights claims far downstream on the Nevada side of the basin.

Water quality in the region is generally very good but many communities face specific water quality problems. These include localized high arsenic levels, groundwater contamination from septic tank discharges in high-density subdivision areas such as those near Eagle Lake, and MTBE contamination in South Lake Tahoe. Drinking water quality has also become a greater issue for many surface water systems around Lake Tahoe, forcing many of the smaller private systems to consolidate or change ownership because they are unable to afford the new monitoring and treatment regulatory requirements. South Tahoe Public Utility District, the

largest water purveyor in the basin, is also experiencing some difficulty in meeting these requirements. The abandoned Leviathan Mine, a Superfund site, impacts local creeks with acid mine drainage.

The Porter-Cologne Act bans the discharge of domestic wastewater from California in the Lake Tahoe basin; the same ban Nevada is by executive order, resulting in the export of all domestic wastewater from the basin. Lake Tahoe's clarity has declined as development increased around the shoreline, increasing the sediment load and nutrients reaching the lake, promoting growth of algae.

California local interests in the northern part of the region have been apprehensive about Reno area's aggressive quest for additional water supplies. In the late 1980's, the Silver State Plan triggered concerns as far north as Modoc County (Over 150 miles north of Reno). The plan envisioned constructing a pipeline north nearly to the Oregon border to tap groundwater basins, some of which extend across the California-Nevada line. More recently, the proposed Truckee Meadows Project generated concern about depletion of groundwater supplies.

## Looking to the future

No major changes in water use are anticipated in the near future in the northern portion of the region. A small amount of agricultural expansion is expected in areas that can support additional groundwater development. Likewise, the modest need for additional municipal and irrigation supplies can be met by some expansion of present surface systems or by increased use of groundwater.

Concern over protecting groundwater resources has led to establishment of formal groundwater management mechanisms in the Honey Lake and Long Valley basins. Similar arrangements are being considered in Surprise Valley and the pending interstate allocation establishes limits on groundwater withdrawals in the Lake Tahoe and Truckee basins. At present, neither the Honey Lake nor Long Valley groundwater management districts are active, but they can be activated when needed.

The Truckee, Carson and Walker rivers are currently controlled by federal water masters according to federal court decrees. Each of these decrees may be revised to some degree within the next few years through a settlement agreement for the Truckee River and through mediation for the Walker River. Since further water development in these basins may be limited, especially in Nevada, water transfers will increasingly be used to meet changing or higher priority needs within the basins. This has resulted

in acquisition of some agricultural land and water rights to meet municipal needs downstream in Reno/Sparks and environmental needs throughout the basins.

Programs to manage Lake Tahoe water quality by regulating development, land disturbance, and preventing pollutants from reaching the lake are being implemented at the federal, state, and local levels. The Tahoe Regional Planning Agency (TRPA), a bistate agency created by Congress, sets regional environmental standards, issues land use permits (Including conditions to protect water quality), and takes enforcement actions throughout the basin. In addition to its regulatory activities, TRPA implements a capital improvement program to repair environmental damage done before its regional plan was adopted. Federal, state, and local governments have invested nearly \$90 million in erosion control, storm water drainage, stream zone restoration, public transit, and other capital projects. The USFS's Lake Tahoe Basin Management Unit, which controls over 70 percent of the land in the Tahoe Basin, has implemented a watershed restoration program and a land acquisition program to prevent development of sensitive private lands. In recent years, federal and state agencies have increased funding to protect the environment of Lake Tahoe. Roads and road maintenance activities, including snow removal and deicing, are restricted because of erosion and other impacts. Agricultural pesticides in the Lake Tahoe basin are prohibited, as are the use of phosphate-based detergents. TRPA has banned the use of two-stroke engines on Lake Tahoe to prevent contamination from gasoline components such as benzene and MTBE.

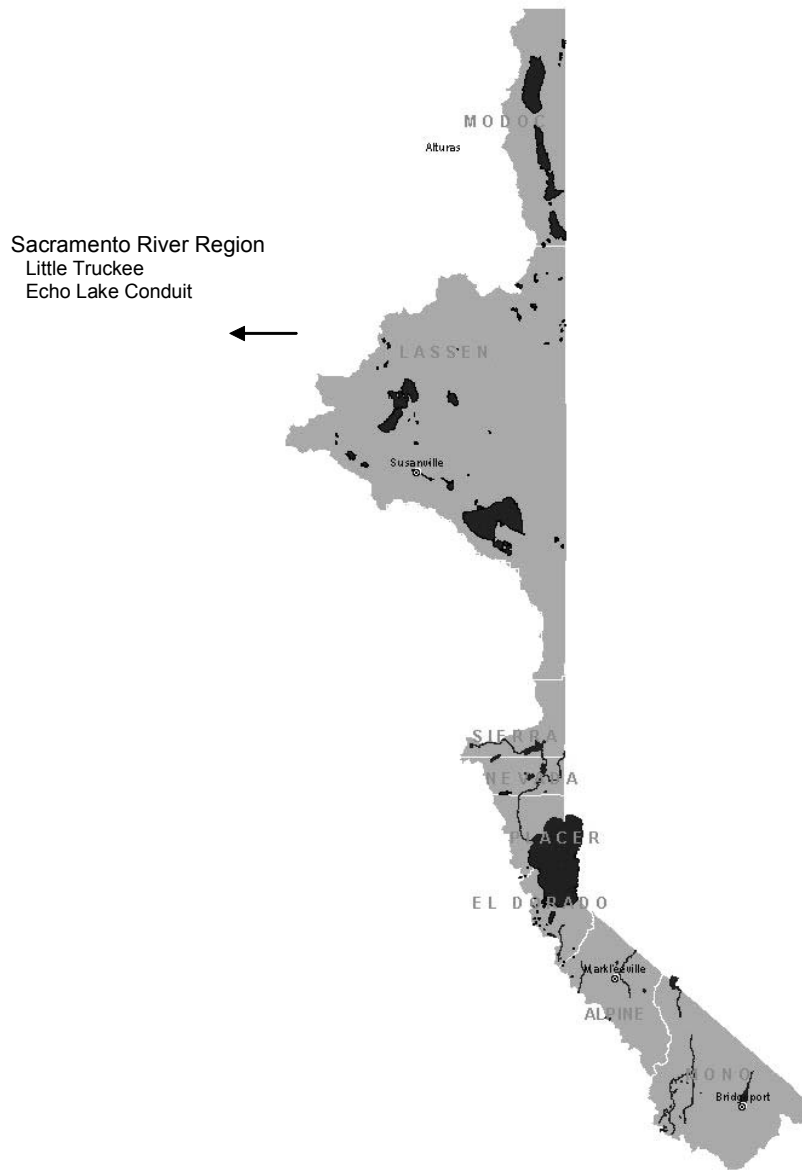
Northern California counties lack the resources and funding to assist them with regional or local plans.

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## NORTH LAHONTAN HYDROLOGIC REGION

**Some Statistics**

- Area - 6,122 square miles (3.9% of State)
- Average annual precipitation - 22 inches
- Year 2000 population - 99,035
- 2030 population projection – 155,065
- Total reservoir storage capacity - 1,181 TAF
- 1995 irrigated agriculture - 153,800 acres